

## Amendments to the Claims

The listing of the claims will replace all prior versions and listing of the claims in this application.

1. (currently amended) A thickness shear mode piezoelectric resonator for use in a sensor arrangement for detecting or measuring an analyte in a medium by mass changes, comprising:  
a quartz crystal plate having a first crystal surface and a second crystal surface, said first crystal surface comprises a first electrode having a surface area of less than  $15 \text{ mm}^2$  said second crystal surface comprises a second electrode.
2. (previously presented) The resonator of claim 1, wherein the surface area of the first electrode is less than  $10 \text{ mm}^2$ .
3. (previously presented) The resonator according to claim 1, wherein the surface area of the first electrode is at least  $0.05 \text{ mm}^2$ .
4. (previously presented) The resonator according to claim 1, wherein the surface area of the first electrode is smaller than the first crystal surface.
5. (previously presented) The resonator according to claim 1, wherein the distance from the sensing electrode edge to the crystal edge is at least  $0.2 \text{ mm}^2$ .
6. (previously presented) The resonator according to claim 1, wherein the first electrode has a rectangular-shaped surface, having a first side and a second side.
7. (previously presented) The resonator according to claim 1, wherein the first side is at least 0.1-10 times as long as the second side.
8. (previously presented) The resonator according to claim 1, wherein the first crystal surface is provided with a first contacting area connected to the first electrode; and the second crystal surface is provided with a second area connected to the second electrode.
9. (previously presented) The resonator according to claim 1, wherein the first electrode has a first side and a second side; and the first contacting area is connected to the second side of the first electrode.
10. (previously presented) The resonator according to claim 1, wherein the first crystal surface and the second crystal surface are flat.
11. (previously presented) The resonator according to claim 1, wherein the quartz crystal is an inverted mesa.
12. (previously presented) The resonator of claim 11, wherein the quartz crystal plate comprises a first recess having a wall and a bottom surface and a first electrode in the first recess; the area of the bottom surface is larger than the first electrode; and the first electrode is arranged in the recess such that there is a distance between the electrode and the recess wall.

13. (previously presented) The resonator of claim 11, wherein the shortest distance from the electrode to the recess wall is at least 0.01 mm.

Claims 14-22 have been cancelled.

23. (previously presented) A method of sensing or measuring, comprising using a thickness shear mode resonator according to claim 1 to sense or measure.

24. (previously presented) The method according to claim 23, wherein the resonator is used to sense or measure of liquid samples.

25. (previously presented) The resonator according to claim 1, wherein the surface area of the first electrode is 1-5 mm<sup>2</sup>.

26. (previously presented) The resonator according to claim 4, wherein the first electrode has a surface area that is 0.1-90% of the crystal area.

27. (previously presented) The resonator according to claim 5, wherein the distance from the sensing electrode edge to the crystal edge is at least 1 mm.

28. (previously presented) The resonator according to claim 27, wherein the distance from the sensing electrode edge to the crystal edge is at least 2 mm.

Claims 29-37 have been cancelled.